

### 3.2 Medical Requirements Overview

**TABLE 3.2: MEDICAL REQUIREMENTS OVERVIEW**

<b>MRID# and Title:</b>	MR014S Pre- and Postflight Optometry Examination for Short Duration Flights
<b>Sponsor:</b>	Medical Operations
<b>IPT:</b>	Therapeutics and Clinical Care
<b>Category:</b>	Medical Requirements (MR)
<b>References:</b>	Medical Operations Requirements Document (MORD) for Space Shuttle JSC 13956 Section 2.1.2 Preflight Medical Evaluations Section 2.1.3 Postflight Medical Evaluations Astronaut Medical Evaluation Requirements Document (AMERD) JSC 24834 Appendix A, Section III Medical Standards/Procedures, Paragraph 3.5, Visual Testing Appendix B, Section III Annual Medical Evaluation Requirements, Paragraph 3.4 Appendix B, Section V Pre- and Postflight Medical Evaluation Requirements for Short Duration Flights, Paragraphs, 4.1 and 4.2
<b>Purpose/Objectives:</b>	To assess the status of ophthalmic health and function pre- and postflight.
<b>Measurement Parameters:</b>	Visual acuity, tonometry, fundoscopic examination, refraction, pupil reflexes, extraocular muscle assessment, biomicroscopy
<b>Deliverables:</b>	A pre- and postflight eye examination report will be included in the CMIS
<b>Flight Duration:</b>	< 30 days
<b>Number of Flights:</b>	All short duration flights
<b>Number and Type of Crew Members Required:</b>	All Shuttle crewmembers
<b>Other Flight Characteristics:</b>	N/A

**3.3 Preflight Training: None****3.4 Preflight Activities****TABLE 3.4: PREFLIGHT ACTIVITIES**

Preflight Activity	Description:	An Optometry examination will be conducted preflight by a specialist. The examination includes:				
		L-90/120 days <ul style="list-style-type: none"><li>• Best Corrected Visual Acuity</li><li>• Refraction</li><li>• Spectacle/Contact Lens Storage Plan</li><li>• Tonometry</li><li>• Amsler Grid Testing</li></ul>				
	Schedule:	L-10 days <ul style="list-style-type: none"><li>• Fundoscopy</li><li>• Pupil Reflexes</li><li>• Extraocular Muscle Assessment</li><li>• Biomicroscopy (Slit Lamp)</li><li>• Tonometry (if indicated)</li></ul>				
		Duration:		Schedule:	Flexibility:	Personnel Required:
		Optometry Examination: 30min Optometry Examination: 15 min.		90/120 days L-10 days (see notes)	N/A	Specialist and crewmember Specialist and crewmember
Ground Support Requirements Hardware/Software	Preflight Hardware:		Preflight Software:		Test Location:	
	Ophthalmic examination equipment		N/A		U.S.	
Testing Facilities	Minimum Room Dimensions:	Number of Electrical Outlets:	Temperature Requirements:	Special Lighting:		
	8' x 10'	2 (110V)	Ambient	Adjustable		
	Hot or Cold Running Water:	Privacy Requirements:	Vibration/Acoustic Isolation:	Other:		
	N/A	Private room free of distraction	N/A	N/A		
Constraints/Special Requirements:		Dilation is not performed during the fundus examination.				
Launch Delay Requirements:		N/A				
Notes:		Results from the eye examination conducted during an annual physical may be used if within 90 days of the MAT test date. The L-10 examination is for contact lens wearers, and at the discretion of the vision specialist/flight surgeon, for non- contact lens wearers.				
Data Delivery	Data/Report to Designated Recipients (Nominal/Contingency):					
	Preflight eye examination reports will be kept in the crewmember's medical file and electronic medical record. It will be distributed at the discretion of the Flight Surgeon.					

**3.5 In-Flight Activities: None**

**3.6 Postflight Activities****TABLE 3.6 POSTFLIGHT ACTIVITIES**

Postflight Activity	Description:	An Optometry examination will be conducted postflight by a specialist. The examination includes: R+3 days <ul style="list-style-type: none"><li>• Best Corrected Visual Acuity</li><li>• Tonometry</li><li>• Fundoscopy (see notes)</li><li>• Pupil Reflexes</li><li>• Amsler Grid Testing</li><li>• Extraocular Muscle Assessment</li><li>• Biomicroscopy (Slit Lamp)</li><li>• Survey</li></ul>			
		Schedule:			
		Duration:	Schedule:	Flexibility:	Personnel Required:
	Optometry Examination: 15min	R+3 days	N/A	Specialist and crewmember	
Ground Support Requirements Hardware/Software	Postflight Hardware:	Postflight Software:		Test Location:	
	Optometry examination equipment	N/A		U.S.	
Testing Facilities	Minimum Room Dimensions:	Number of Electrical Outlets:	Temperature Requirements:	Special Lighting:	
	8’ x 10’	2 (110V)	Ambient	Adjustable	
	Hot or Cold Running Water:	Privacy Requirements:	Vibration/Acoustic Isolation:	Other:	
	N/A	Private room free of distraction	N/A	N/A	
Constraints/Special Requirements:	Drugs used to dilate the pupils will cause increased sensitivity to bright light and blurred vision. <u>If</u> dilation is required, this exam should be scheduled after neurovestibular activities or other tests that require the use of the eyes. Dilation will require extra time. Constraints <u>following</u> the exam include: <ul style="list-style-type: none"><li>• No piloting of aircraft for 24 hours after dilation</li><li>• Driving may be done but with extra caution</li><li>• Avoid operation of any heavy equipment</li><li>• Avoid operation of anything that may require acute vision, such as Remote Arm operation training</li><li>• Avoid bright light situations</li></ul>				
Notes:	Dilation is performed if the crewmember participated in an EVA or if any occupational lasers were used during the mission. Dilation will require additional time. If eye exam results are off-nominal, a follow-up exam may be scheduled at any time at the discretion of the vision specialist/flight surgeon.				
Data Delivery	Data/Report to Designated Recipients (Nominal/Contingency):				
	Postflight eye examination reports will be kept in the crewmember’s medical file and electronic medical record. It will be distributed at the discretion of the Flight Surgeon.				

**3.7 Summary Schedule****TABLE 3.7: SUMMARY SCHEDULE**

ACTIVITY	DURATION	SCHEDULE	FLEXIBILITY	PERSONNEL REQUIRED	CONSTRAINTS
<b>Preflight Training: N/A</b>					
<b>Preflight Activity</b>					
Optometry Examination	30 min	L-90/120 days	N/A	Specialist and Crewmember	The L-10 examination is for contact lens wearers, and at the discretion of the vision specialist/flight surgeon, for non- contact lens wearers. Dilation is not performed during the fundus exam.
<ul style="list-style-type: none"> <li>• Best Corrected Visual Acuity</li> <li>• Refraction</li> <li>• Spectacle/Contact Lens Storage Plan</li> <li>• Tonometry</li> <li>• Amsler Grid Testing</li> </ul>	15 min	L-10 days		Specialist and Crewmember	
Optometry Examination					
<ul style="list-style-type: none"> <li>• Fundoscopy</li> <li>• Pupil Reflexes</li> <li>• Extraocular Muscle Assessment</li> <li>• Biomicroscopy (Slit Lamp)</li> <li>• Tonometry (if indicated)</li> </ul>					
<b>In-Flight: N/A</b>					
<b>Wheels-Stop: N/A</b>					

# MR014S Pre- and Postflight Optometry Examination for Short Duration Flights

MR014S  
SM-FI-102-R1

Postflight Activity	DURATION	SCHEDULE	FLEXIBILITY	PERSONNEL REQUIRED	CONSTRAINTS
Ophthalmology Examination <ul style="list-style-type: none"> <li>• Best Corrected Visual Acuity</li> <li>• Tonometry</li> <li>• Fundoscopy (dilation if indicated)</li> <li>• Pupil Reflexes</li> <li>• Amsler Grid Testing</li> <li>• Extraocular Muscle Assessment</li> <li>• Biomicroscopy (Slit Lamp)</li> <li>• Survey</li> </ul>	15 min.	R+3 days	N/A	Specialist and Crewmember	Drugs used to dilate the pupils will cause increased sensitivity to bright light and blurred vision. If dilation is required, this exam should be scheduled after neurovestibular activities or other tests that require the use of the eyes. Dilation will require extra time. Constraints <u>following</u> the exam include: <ul style="list-style-type: none"> <li>• No piloting of aircraft for 24 hours after dilation</li> <li>• Driving may be done but with extra caution</li> <li>• Avoid operation of any heavy equipment</li> <li>• Avoid operation of anything that may require acute vision, such as Remote Arm operation training</li> <li>• Avoid bright light situations</li> </ul>
<b>Postflight Debrief: N/A</b>					